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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,802	07/26/2000	William J. Dally	2789.2006-001	8246

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EXAMINER

BROWN, VERNAL U

ART UNIT	PAPER NUMBER
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2635

DATE MAILED: 12/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/625,802

Applicant(s)

DALLY ET AL.

Examiner

Vernal U Brown

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The application of William J Dally for High Speed, Lo-power Crossbar Switch filed 7/26/2000 has been examined. Claims 1-21 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 11 are rejected under 35 U.S.C. 112 second paragraph.

The term "similar" in claims 5 and 11 is a relative term which renders the claim indefinite. The term "similar" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6, 9, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upp U.S Patent 4914429 in view of Bridgewater, Jr. U.S Patent 6034551.

Regarding claim 1, Upp teaches a crosspoint switch (figure 1) comprising a plurality of input and output busses (figure 1) but is silent on teaching the input and output busses are driven at low swing. Bridgewater, Jr. in an art related Low Voltage Differential Dual Receiver invention with a plurality of input and output buses teaches the use of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19).

It would have been obvious to one of ordinary skill in the art to have input and output busses driven at low swing in Upp as evidenced by Bridgewater, Jr. because Upp suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches low-voltage swing input and output busses and low-voltage swing busses are widely used in the art as a means of lowering the power consumption switching circuitry (col. 4 lines 34-40).

Regarding claim 4, Upp teaches an amplifier (87) that is a clock regenerative amplifier (figure 3).

Regarding claim 5, Upp teaches a timing circuit which controls timing of the crosspoint switch from a clock (figure 3). Upp further teaches an amplifier (87) and an integrator which inherently introduces a delay.

Regarding claim 6, Upp is silent on teaching the signals on the input buses and the output buses are differential signals. Bridgewater, Jr. in art related Low Voltage Differential Dual Receiver teaches the use of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19).

It would have been obvious to one of ordinary skill in the art for the signals on the input buses and the output buses are differential signals in Upp as evidenced by Bridgewater, Jr. because Upp suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches the use of low-voltage swing receiver in order to improve bus performance because the amount of time to generate a voltage differential is significantly less than the time required to transition from the supply voltage to the zero level.

Regarding claim 9, Upp is silent on teaching the signals on the input buses and the output buses are differential signal. Bridgewater, Jr. in art related Low Voltage Differential Dual Receiver teaches the use of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19).

It would have been obvious to one of ordinary skill in the art for the signals on the input buses and the output buses are differential signal in Upp as evidenced by Bridgewater, Jr. because Upp suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches the differential input and output signals in order to reduce power consumption of the input and output busses.

Regarding claim 21, Upp teaches a crosspoint switch comprising a means for driving a plurality signals on a plurality of input buses and a plurality of crosspoint means for sensing signals on the input buses and driving signals on a plurality of output buses (figure 5, col. 3 lines 50-60) but is however silent on teaching the use of low swing signals on the input and output buses. Bridgewater, Jr. in art related Low Voltage Differential Dual Receiver invention teaches the use of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19).

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It would have been obvious to one of ordinary skill in the art to have input and output busses driven at low swing in Upp as evidenced by Bridgewater, Jr. because Upp suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches low-voltage swing input and output busses and low-voltage swing busses are widely used in the art as a means of lowering the power consumption switching circuitry.

Claims 2, 3, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upp U.S Patent 4914429 in view of Bridgewater, Jr. 6034551 and further in view of Dupcak et al. U.S Patent 6414520.

Regarding claims 2, Upp in view of Bridgewater, Jr. is silent on teaching each crosspoint switch comprises an amplifier. Dupcak et al. in an art related Universal Low Swing Sense Amplifier invention teaches amplifiers for use with low voltage swing signals (col. 3 lines 44-45).

It would have been obvious to one of ordinary skill in the art for each crosspoint to comprise an amplifier in Upp in view of Bridgewater, Jr. as evidenced by Dupcak et al. because Upp in view of Bridgewater, Jr. suggests a crosspoint switch having low swing inputs and outputs and Dupcak et al. teaches amplifiers for use with low voltage swing signals to detect and latch the input signal.

Regarding claim 3, Upp is silent on teaching each crosspoint comprises a low swing driver circuit.

Regarding claim 8, Upp teaches clocked regenerative amplifier (87) in figure 3. The crosspoint switch includes a plurality of clock circuits (col. 3 line 56) but is silent on teaching a

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plurality of amplifiers that amplify the signal on the output. Dupcak et al. in an art related Universal Low Swing Sense Amplifier invention teaches amplifiers for use with low voltage swing signals (col. 3 lines 44-45).

It would have been obvious to one of ordinary skill in the art for to each crosspoint to comprise a plurality of amplifiers that amplify the signal on the output in Upp in view of Bridgewater, Jr. as evidenced by Dupcak et al. because Upp in view of Bridgewater, Jr. suggests a crosspoint switch having low swing inputs and outputs and Dupcak et al. teaches amplifiers for use with low voltage swing signals to detect and latch the input signal.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Upp U.S Patent 4914429 in view of Bridgewater, Jr. U.S Patent 6034551 and further in view of Lukes et al. U.S Patent 6218901.

Regarding claim 7, Upp in view of Bridgewater, Jr. teaches low swing differential drivers (U.S Patent 6034551, col. 3 lines 17-19) but is silent on teaching drivers with push-pull driver circuits driving a pair of differential lines. Luke et al. in an art related High Speed Differential Output Driver invention teaches push-pull driver circuits driving a pair of differential lines (col. 1 lines 65-66).

It would have been obvious to one of ordinary skill in the art to have with push-pull driver circuits driving a pair of differential lines in Upp in view of Bridgewater, Jr. as evidenced by Lukes et al. because Upp in view of Bridgewater, Jr. suggests a crosspoint switch having low swing differential drivers and Luke et al. teaches push pull drivers driving differential signals in order to increase bus performance and to reduce the power requirement of the circuitry.

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Claims 10, 11, 13-16, 18, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upp U.S Patent 4914429 in view of Bridgewater, Jr. U.S Patent 6034551 and further in view of Dupcak et al. U.S Patent 6414520.

Regarding claims 10 and 13, Upp teaches a crosspoint switch (figure 1) comprising a plurality of input and output busses (figure 1) with each crosspoint selectively passing a signal from an input bus to an output bus (col. 3 lines 60-63). Upp is however silent on teaching a plurality of low swing drivers driving a pair of differential lines and each crosspoint comprising an amplifier which amplifies a signal on an input bus. Bridgewater, Jr. in art related Low Voltage Differential Dual Receiver teaches the use of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19) but is also silent on teaching each crosspoint comprising an amplifier which amplifies a signal on an input bus and a plurality of output amplifiers which sense the signals on the output buses. Dupcak et al. in an art related Universal Low Swing Sense Amplifier invention teaches amplifiers for use with low voltage swing signals (col. 3 lines 44-45).

It would have been obvious to one of ordinary skill in the art to have plurality of low swing drivers driving a pair of differential lines and each crosspoint comprising an amplifier which amplifies a signal on an input bus in Upp as evidenced by Bridgewater, Jr. in view of Lukes et al. because suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches the use of low-voltage low voltage swing driver in order to improve bus performance because the amount of time to generate a voltage differential is significantly less than the time required to transition from the supply voltage to the zero level and Dupcak et

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al. further teaches amplifiers for use with low voltage swing signals to detect and latch the input and output signal.

Regarding claims 11 and 15, Upp teaches a timing circuit which controls timing of the crosspoint switch from a clock (figure 3. Upp further teaches an amplifier (87) and an integrator which inherently introduces a delay.

Regarding claims 12 and 14, Upp teaches an amplifier (87) that is a clock regenerative amplifier (figure 3).

Regarding claims 16 and 19, Upp is silent on teaching the signals on the input buses and the output buses are differential signals. Bridgewater, Jr. in art related Low Voltage Differential Dual Receiver teaches the use of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19).

It would have been obvious to one of ordinary skill in the art for the signals on the input buses and the output buses are differential signals in Upp as evidenced by Bridgewater, Jr. because Upp suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches the use of low-voltage low-voltage swing receiver in order to improve bus performance because the amount of time to generate a voltage differential is significantly less than the time required to transition from the supply voltage to the zero level.

Regarding claim 18, Upp teaches clocked regenerative amplifier (87) in figure 3. The crosspoint switch includes a plurality of clock circuits (col. 3 line 56) but is silent on teaching a plurality of amplifiers that amplify the signal on the output put. Dupcak et al. in an art related

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Universal Low Swing Sense Amplifier invention teaches amplifiers for use with low voltage swing signals (col. 3 lines 44-45).

It would have been obvious to one of ordinary skill in the art for to each crosspoint to comprise a plurality of amplifiers that amplify the signal on the output in Upp in view of Bridgewater, Jr. as evidenced by Dupcak et al. because Upp in view of Bridgewater, Jr. suggests a crosspoint switch having low swing inputs and outputs and Dupcak et al. teaches amplifiers for use with low voltage swing signals to detect and latch the input signal.

Regarding claim 20, Upp teaches a method of connecting signals from a plurality of input buses to a plurality of output buses (figure 1) but is silent on teaching driving signals on the input buses through a plurality of low swing drivers with each low swing drivers driving a pair of low swing pair of differential lines, using amplifier to amplify signal on the input buses and sensing the low swing signals on the output buses with amplifiers. Bridgewater, Jr. in art related Low Voltage Differential Dual Receiver invention teaches a bus using of low-voltage swing differential drivers and low-voltage swing receiver (col. 3 lines 17-19) but is also silent on teaching amplifier to amplify signal on the input buses and sensing the low swing signals on the output buses with amplifiers. Dupcak et al. in an art related Universal Low Swing Sense Amplifier invention teaches amplifiers for use with low voltage swing signals for amplifying the signal on the input buses and sensing the low swing signals on the output buses with amplifiers (col. 3 lines 44-45).

It would have been obvious to one of ordinary skill in the art for the signals on the input buses and the output buses are differential signals and amplifier to amplify signal on the input buses and sensing the low swing signals on the output buses with amplifiers in Upp as evidenced by Bridgewater, Jr. in view of Lukes et al. because Upp suggests a crosspoint switch having a plurality of input and output busses and Bridgewater, Jr. teaches the use of low-voltage low-voltage swing receiver in order to improve bus performance because the amount of time to generate a voltage differential is significantly less than the time required to transition from the supply voltage to the zero level. Dupcak et al. further teaches amplifiers for use with low voltage swing signals to detect and latch the input signal.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Upp U.S Patent 4914429 in view of Bridgewater, Jr. U.S Patent 6034551 and further in view of Lukes et al. U.S Patent 6218901.

Regarding claim 17, Upp in view of Bridgewater, Jr. teaches low swing differential drivers (U.S Patent 6034551, col. 3 lines 17-19) but is silent on teaching drivers with push-pull driver circuits driving a pair of differential lines. Luke et al. in an art related High Speed Differential Output Driver invention teaches push-pull driver circuits driving a pair of differential lines (col. 1 lines 65-66).

It would have been obvious to one of ordinary skill in the art to have with push-pull driver circuits driving a pair of differential lines in Upp in view of Bridgewater, Jr. as evidenced

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by Lukes et al. because Upp in view of Bridgewater, Jr. suggests a crosspoint switch having low swing differential drivers and Luke et al. teaches push pull drivers driving differential signals in order to increase bus performance and to reduce the power requirement of the circuitry.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vernal U Brown whose telephone number is 703-305-3864. The examiner can normally be reached on M-F, 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on 703-305-4704. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-6743 for regular communications and 703-308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.


Vernal Brown
December 2, 2002

MICHAEL HORABIK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

